

REMARKS

Applicants concurrently file herewith an Excess Claim Fee Payment Letter, and corresponding excess claim fee for 1 excess total claim.

Claims 1-17, 26, and 28-38 are all of the claims presently pending in the application. Claim 38 has been added to provide more varied protection for the claimed invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-17, 26, and 28-37 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tuttle et al. (U.S. Publication No. 2004/0040628). Claims 3, 9-17, 26, and 29-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tuttle in view of DE3824127. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tuttle in view of Chang et al. (U.S. Patent No. 5,763,108).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention of exemplary claim 1 provides a method of thermally treating a magnetic layer of a wafer including applying at least one local magnetic field to the magnetic layer obtained without making electrical contact to the wafer (e.g., see Application at page 7, lines 15-21). This combination of features allows for a fast and local annealing of magnetic stacks (see Application at page 3, lines 20-21). Additionally, magnetic stacks using an exchange-biasing antiferromagnet such as PtMn can be reliably and efficiently annealed in a

magnetic field after deposition, in order to align the pinning of the magnetic reference layer (see Application at page 4, lines 15-18).

II. THE PRIOR ART REFERENCES

A. The Tuttle Reference

The Examiner alleges that one of ordinary skill in the art would have combined Tuttle with Shimazawa to render obvious the claimed invention of claims 6, 12, 26, 28, and 34. Applicants respectfully submit, however, that, even if combined, the alleged combination of references would not teach or suggest each feature of the claimed invention.

That is, Applicants submit that claims 6, 12, 26, 28, and 34 are allowable at least based on similar reasons to those set forth above with respect to claims 1-3, 7, 8, 10, 11, 13, 14, 16, 17, 30, 32, and 33.

Moreover, Applicants submit that Tuttle fails to make up the deficiencies of Shimazawa.

Indeed, Tuttle merely teaches annealing individual wafers in order to reduce the annealing time and in order to make it easier to generate a uniform field over the whole wafer. Tuttle discloses, "According to the known bulk process, the applied magnetic field is generated either by a large electromagnet or a large permanent magnet. Either way, a powerful magnet is necessary to provide the required uniform magnetic field over the large volume of wafers." (e.g., see Tuttle at paragraph [0008]). Tuttle teaches applying a uniform field to the wafer. For example, Tuttle uses a Helmholtz coil, which is well known for generating uniform fields. Tuttle does not teach or suggest applying local fields to the wafer.

Therefore, Applicants respectfully submit that these references, even if combined, would not teach or suggest each feature of the claimed invention. Accordingly, Applicants

respectfully request the Examiner to reconsider and withdraw this rejection.

B. The Fraunhofer Reference

The Examiner alleges that Fraunhofer would have been combined with Tuttle to teach the claimed invention of claims 3, 9-17, 26, and 29-37. Applicants submit, however, that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

Therefore, Applicants submit that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

C. The Chang Reference

The Examiner alleges that Chang would have been combined with Tuttle to teach the claimed invention of claim 4. Applicants submit, however, that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

Therefore, Applicants submit that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

IV. NEW CLAIMS

Applicants have added new claim 38 to claim an additional feature of the invention and to provide more varied protection for the claimed invention. This claim is independently patentable because of the novel and nonobvious features recited therein.

That is, the cited references do not teach or suggest, *“A method of thermally treating a magnetic layer of a wafer, comprising:*

annealing, for a predetermined short duration, a magnetic layer of a single wafer;

applying at least one local magnetic field to said magnetic layer obtained without making electrical contact to the wafer; and

cooling the single wafer using argon,

wherein said annealing comprises heating only a local area on the single wafer at a temperature of 280 degrees C for 60 seconds in the presence of a magnetic field using a rapid thermal anneal (RTA) lamp,

wherein said applying a magnetic field to said magnetic layer is conducted after said annealing and comprises applying local fields in different directions to different areas of the single wafer, and

wherein said single wafer comprises a magnetic stack formed thereon, said magnetic stack having a structure of 50 TaN/50Ta/175PtMn/15CoFe/9Al/50Py/100TaN.”

Applicants submit that new claim 38 is patentable over the cited prior art references at least for analogous reasons to those set forth above with respect to claims 1-38.

V. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicants submit that claims 1-17, 26, and 28-38, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed

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below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,



Date: March 20, 2008

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